REMARKS

Applicant has carefully reviewed and considered the Final Office Action mailed on September 28, 2005, and the references cited therewith.

Claims 1, 5, and 9 are amended, and no claims are canceled or added; as a result, claims 1-12 are now pending in this application.

§ 102 Rejection of the Claims

Claims 1-3, 5 and 9-11 were rejected under 35 USC § 102(e) as being anticipated by Oda (U.S. Patent No. 6,819,359). Applicant respectfully traverses the rejection as follows.

Applicant does not admit that the Oda reference is indeed prior art and reserves the right swear behind the same at a later date. Nonetheless, Applicant believes that claims 1-3, 5, and 9-11 are distinguishable from the cited reference for at least the following reasons.

With regard to independent claims 1, 5, and 9, the Examiner cites the Oda reference, in section 5 of the final Office Action, as describing, "the pixel data associated with at least one of said pixels (defective pixel), wherein for the at least one of said pixels an associated offset value equals an associated gain value . . ." In column 5, lines 42-49, Oda states:

> The imaging device 14 usually contains defective photosensitive cells, or pixels, caused during manufacturing. . . . The manufacturer of the imaging device 14 supplies coordinate data indicating the defective pixel positions on the imaging plane of the photosensitive array. This coordinate data is stored in a coordinate memory 48 connected to the control unit 36 . . .

By so stating, Oda appears to describe the manufacturer of the imaging device supplying coordinate data specifying the defective pixel positions caused during manufacturing, which are stored in a coordinate memory connected to the control unit. The reference does not show output generated during an imaging operation being used to determine that a particular sensor is defective, specifically that a pixel generated by that sensor has "an associated offset value [that] equals an associated gain value".

In contrast, Applicant's independent claim 1, as amended, recites:

> a spatial array of sensors for converting a visual image to signals, each of said sensors providing a respective signal during an imaging operation; and

> a signal converter for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors during the imaging operation, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors during the imaging operation, the pixel data associated with at least one of said pixels during the imaging operation, wherein for the at least one of said pixels an associated offset value equals an associated gain value during the imaging operation, not being a function of a signal from the respective sensor during the imaging operation but being a function of one or more signals from neighboring sensors during the imaging operation.

Applicant's independent claim 5, as amended, recites:

> calibrating an array of sensors so as to distinguish "good" and "bad" sensors during an imaging operation;
>
> using said array of sensors to convert a visual image to signals during the imaging operation; and
>
> converting said signals to image data including pixel values associated with an array of pixels during the imaging operation, each pixel corresponding to a respective one of said sensors during the imaging operation, pixel values associated with a good sensor being a function of the signal provided by that good sensor during the imaging operation, pixel values associated with a bad sensor during the imaging operation, for which an associated offset value equals an associated gain value during the imaging operation, not being a function of the signal provided by that bad sensor during the imaging operation but being a function of at least one signal provided by a neighboring good sensor during the imaging operation.

In addition, Applicant's independent claim 9, as amended, recites:

> using an array of sensors to generate a series of signals during an imaging operation; and
>
> converting said signals into pixel data describing an array of pixels during the imaging operation, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors during the imaging operation, the pixel data associated with at least one of said pixels during the imaging operation, wherein for the at least one of said pixels an associated offset value equals an associated gain value during the imaging operation, not being a function of a signal from the respective sensor during the imaging operation but being a function of a signal from a neighboring sensor during the imaging operation.

The Oda reference states that defect information on defective pixels is stored in the imaging device (col. 2, lines 65-66; col. 3, lines 29-31, lines 57-59; element 3 of independent apparatus claim 1; and element 1 of independent method claim 6)

and that the defective pixels in the image signal are recognised based on the defect information and that processing the signal also is controlled based on this recognition (col. 3, lines 42-45; col. 4, lines 4-6; element 6 of independent apparatus claim 1; and element 6 of independent method claim 6). As stated in col. 10, lines 46-49, of Oda, "[D]efective pixel coordinate data is stored in the coordinate memory 48, and defective-pixel correction is performed for the pixels corresponding to the coordinate data."

It does not appear that the invention described in the Oda reference can use information regarding defective pixels acquired after the apparatus has been manufactured because "the control unit 36 sends to the digital signal processing unit 34 the position information associated with to [sic] the defective pixel coordinate data recorded in the coordinate memory 48", col. 10, lines 12-15. More specifically, Oda states in col. 11, lines 46-52:

> When color separation is going to be performed on a pixel indicated by the position information, the timing control unit 30 temporarily stops pixel sampling and holds the value of the previous pixel. As a result, the pixel indicated by the position information is not sampled but is replaced with the value of the previous same-color component pixel that was sampled and held immediately before.

The defective pixel coordinate data recorded in the coordinate memory appears to provide position information the timing control unit uses to stop pixel sampling such that the pixel indicated by the position information is not sampled but is replaced with the value of the previous same-color component pixel. Therefore, the information regarding the position of defective pixels seemingly has come from information previously stored in the coordinate memory because sampling of such pixels in particular is stopped, which would prevent information from defective pixels from being accessed in real time.

Consequently, the invention described in Oda apparently cannot use, "pixel values associated with a bad sensor during the imaging operation, for which an associated offset value equals an associated gain value during the imaging operation", as recited in independent claim 5 of the present application. Nor can the invention described in the Oda reference apparently use "the pixel data associated with at least one of said pixels during the imaging operation, wherein for the at least one of said pixels an associated offset value equals an associated gain value during

the imaging operation", as is recited with regard to a defective pixel in independent claims 1 and 9.

Applicant respectfully submits the present claim recitation facilitates on-site, real-time calibration of a digital imaging device to compensate for failure of a sensor. Applicant's specification recites on page 1, lines 21-22, that "Sensor gain (the amount a sensor's electrical output varies for a given change in its photo input) and offset (the output level when there is no illumination) vary from sensor to sensor, and may degrade over time." The specification goes on to recite in lines 25-27, "To compensate for imperfections in light sources, optics, sensors, and electronics, the CIS [contact image sensor] must be calibrated before a good scan/copy can be made, and may require user re-calibration." Page 2, lines 12-13, of the present application recites, "What is needed is an approach for handling defective sensors, especially when the defect is developed in use." In addition, page 3, lines 19-20, recites, "Thus, the present invention provides an economical approach to maintaining satisfactory digital image performance even after a sensor fails."

As such, Applicant submits that each and every element of independent claims 1, 5, and 9, as amended, is not present in the Oda reference. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 102 rejection of independent claims 1, 5, and 9, as well as those claims that depend therefrom.

§ 103 Rejection of the Claims

Claims 6 and 7 were rejected under 35 USC § 103(a) as being unpatentable over Oda (U.S. Patent No. 6,819,359) as applied to claim 5 above, and further in view of Vincent (U.S. Patent No. 5,436,659). Applicant respectfully traverses the rejection as follows.

Claims 6 and 7 depend from independent claim 5. Applicant respectfully submits that claim 5, as amended, is in condition for allowance. From Applicant's review of the Vincent reference, the reference does not cure the deficiencies of the Oda reference. That is, as recited in independent claim 5, as amended, Vincent does not describe, teach, or suggest:

> calibrating an array of sensors so as to distinguish "good" and "bad" sensors during an imaging operation;
>
> using said array of sensors to convert a visual image to signals during the imaging operation; and

converting said signals to image data including pixel values associated with an array of pixels during the imaging operation, each pixel corresponding to a respective one of said sensors during the imaging operation, pixel values associated with a good sensor being a function of the signal provided by that good sensor during the imaging operation, pixel values associated with a bad sensor during the imaging operation, for which an associated offset value equals an associated gain value during the imaging operation, not being a function of the signal provided by that bad sensor during the imaging operation but being a function of at least one signal provided by a neighboring good sensor during the imaging operation.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 103 rejection of dependent claims 6 and 7.

Allowable Subject Matter

Claims 4, 8 and 12 were objected to as being dependent upon a rejected base claims, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant gratefully acknowledges the Examiner indication of this allowable subject matter.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney Gregg W. Wisdom at (360) 212-8052.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

CERTIFICATE UNDER 37 CFR §1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS AF Commissioner for Patents, P.O. BOX 1450 Alexandria, VA 22313-1450, on this 17th day of November, 2005.

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